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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,899	10/09/2003	Brent E. Little	LO-22	4862
35723	7590	04/26/2005	EXAMINER	
LITTLE OPTICS, INC 9020 JUNCTION DRIVE ANNAPOLIS JUNCTION, MD 20701			LIN, TINA M	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 04/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/684,899	<b>Applicant(s)</b> LITTLE, BRENT E.	
	<b>Examiner</b> Tina M. Lin	<b>Art Unit</b> 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/18/03</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Objections*

Claim 1 is objected to because of the following informalities: In claim 1, line 8; the Examiner believes the heading “(c)” to be a typographical error. It appears to the Examiner that the heading should read “(d)”. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2003/0053756 to Lam et al in view of U.S. Patent Application Publication 2003/0044118 to Zhou et al.

In regards to claim 1, Lam et al discloses a mode shape transformer (3), also called a spot size converter, comprising a first waveguide layer (6) and a second waveguide layer (4) with a width that laterally tapers (5) down between the two ends. (Figure 1) But Lam et al fails to disclose a means for fabricating a second waveguide layer contiguously on top of the first waveguide layer. However, Lam et al further discloses the upper and lower waveguides *could* be separated by a cladding region, but does not have to be separated by a cladding region. Additionally, Zhou et al discloses as prior art a mode size conversion with two waveguides, one laterally tapered, where the two waveguides are placed contiguously to each other. (Figure 6) Since Lam et al and Zhou et al are both from the same field of endeavor, and Lam et al discloses

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the two waveguides does not have to be separated by a cladding layer and Zhou et al shows two waveguides placed one on top of another as prior art, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have placed the waveguides on top of one another as disclosed by Lam et al and shown by Zhou et al.

In regards to claim 2, Lam et al discloses the first refractive index to be 1.475 and the second refractive index to be 1.56. The word substantially is a relative term and therefore, the two values are substantially equal to each other. So, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have the first refractive index and the second refractive index substantially the same.

In regards to claims 3-5, Lam et al and Zhou et al fail to disclose method limitations in the optical mode transformer. However, limitation is a method limitation in a device claim. Applicant is claiming a product not a method of manufacturing the product. The Patent being sought in the preceding claims is an end product that is met by the previous applied references.

In regards to claim 6, Zhou et al (figure 6) and Lam et al (figure 7) both further discloses providing an input fiber. Lam et al then further discloses a first waveguide layer having a width at the input end matching that of the fiber spot size and a second waveguide layer having a width matching that of the fiber spot size. However, neither Zhou et al nor Lam et al discloses the input fiber to have a predetermined spot size. However, in order to manufacture the fiber, a spot size must first be determined and therefore would have a predetermined spot size.

In regards to claim 7, Lam et al discloses the sum of the first thickness of the first waveguide layer and the second thickness of the second waveguide layer to be substantially the same as the input fiber spot size. However, the term substantially is a relative term. From

observation, in Figure 7, it appears the thicknesses of the two waveguides are substantially the same as the fiber spot size.

In regards to claim 8, Lam et al discloses a means for depositing a first waveguide layer (6, 21) on a substrate (22), a means for fabricating a second waveguide layer (4, 24) where the second waveguide layer has a width that is laterally tapered (5). But Lam et al fails to disclose a means for fabricating a second waveguide layer contiguously on top of the first waveguide layer. However, Lam et al further discloses the upper and lower waveguides *could* be separated by a cladding region, but does not have to be separated by a cladding region. Additionally, Zhou et al discloses as prior art a mode size conversion with two waveguides, one laterally tapered, where the two waveguides are placed contiguously to each other. (Figure 6) Since Lam et al and Zhou et al are both from the same field of endeavor, and Lam et al discloses the two waveguides does not have to be separated by a cladding layer and Zhou et al shows two waveguides placed one on top of another as prior art, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have placed the waveguides on top of one another as disclosed by Lam et al and shown by Zhou et al.

In regards to claim 9, Lam et al discloses the first refractive index to be 1.475 and the second refractive index to be 1.56. The word substantially is a relative term and therefore, the two values are substantially equal to each other. So, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have the first refractive index and the second refractive index substantially the same.

In regards to claim 10, Lam et al further discloses depositing layers in order to fabricate the mode shape transformer.

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In regards to claim 11, Lam et al discloses depositing a lower refractive index (1.46) material over the first waveguide and then depositing a second waveguide layer on top of the first waveguide layer.

In regards to claim 12, Lam et al further discloses an etching process in order to fabricate the mode shape transformer.

In regards to claim 13, Zhou et al (figure 6) and Lam et al (figure 7) both further discloses providing an input fiber. Lam et al then further discloses a first waveguide layer having a width at the input end matching that of the fiber spot size and a second waveguide layer having a width matching that of the fiber spot size. However, neither Zhou et al nor Lam et al discloses the input fiber to have a predetermined spot size. However, in order to manufacture the fiber, a spot size must first be determined and therefore would have a predetermined spot size.

In regards to claim 14, Lam et al discloses the sum of the first thickness of the first waveguide layer and the second thickness of the second waveguide layer to be substantially the same as the input fiber spot size. However, the term substantially is a relative term. From observation, in Figure 7, it appears the thicknesses of the two waveguides are substantially the same as the fiber spot size.

The documents submitted by applicant in the Information Disclosure Statement have been considered and made of record. Note attached copy of form PTO-1449.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References C-F all discuss spot size converters or mode shape transformers.

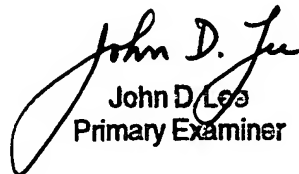
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tina M. Lin whose telephone number is (571) 272-2352. The examiner can normally be reached on Monday-Friday 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
TML

  
John D. Lee  
Primary Examiner